



King County

Department of Natural Resources and Parks
Wastewater Treatment Division

Questions for the Vashon Sewage Treatment Plant

Summer 2010

1) How many homes are you serving at the present time?

The plant serves the Vashon Sewer District, which owns and maintains the collection system which delivers sewage from 366 single family households. In addition, there are also multifamily, school or business connections in and around the island's main business area. When these flows are included, it is equivalent to 867 single family homes. A school or industry may account for dozens of "Residential Customer Equivalents."

2) What is the capacity of homes you can serve?

The Vashon Treatment Plant is designed to treat an average daily flow of .18 mgd or 180,000 gallons per day. In 2009, it treated almost .14 mgd. This means it is currently using about 75% of its capacity. The available capacity is equivalent approximately 250 single family residences.

3) During heavy rain periods, is the plant able to treat all the sewage or is untreated sewage going into the sound?

The plant is designed to treat all the wastewater it receives, not to send untreated sewage to Puget Sound. There is capacity to accommodate additional flows during heavy rains. The plant is able to treat a peak flow of 1.14 mgd (1,140,000 gallons per day) for a period of time, but the plant is not designed to handle these peak flows on an on-going basis.

During heavy rains, there are also operational options to avoid untreated sewage going into the Puget Sound. These include storing sewage at the old treatment plant until there is capacity to treat it and ramping up the return activated sludge pump speeds to return sludge back to the aeration basins instead of holding it in the clarifiers.

4) Which is better for the environment septic systems or sewage treatment plants? Please discuss ground water as well as outflow into the sound.

Both perform the same function of treating wastewater to protect public health and the environment. Treatment plants are advantageous as population density and the quantity of wastewater increases. The Vashon Treatment Plant has received Outstanding Performance Awards from the Department of Ecology for both 2008 and 2009 and produces high quality effluent. Below is a further discussion of both.

Treatment plants: All treatment plants that discharge into a local water body are regulated by the National Pollutant Discharge Elimination System and are required to get a permit with effluent standards and specifications for monitoring, treating and discharging treated wastewater. King County Wastewater Treatment Division (WTD) employs a variety of professionals and experts and is held accountable to meeting regulations. In addition, WTD prides itself on producing resources from the wastewater we treat, so 100% of the solids produced on Vashon are used beneficially and most of the energy produced from the Vashon solids that are digested at the South Plant treatment process is recovered and used at our plants or sold to Puget Sound Energy.



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The Vashon Wastewater Treatment Plant's permit can be found at the Washington State Department of Ecology web site at

http://www.ecy.wa.gov/programs/wq/permits/permit_pdfs/vashon_wwtp/permit.pdf.

A fact sheet covering all aspects of the permit. This can be found at

http://www.ecy.wa.gov/programs/wq/permits/permit_pdfs/vashon_wwtp/fs.pdf

Septic tanks: A well-designed, constructed and managed septic system works well and lasts a long time. All property owners with a septic system are responsible for their operation and maintenance. A system that doesn't work or "fails" is an immediate health risk. A failing septic system can contaminate local water bodies and underground aquifers.

Information on septic systems and their maintenance is at the Public Health – Seattle & King County at 206-296-4932 or on the web site at

<http://www.kingcounty.gov/healthservices/health/ehs/wastewater/owners.aspx>

Basic on-site septic tank maintenance includes the following:

- ☐ Know the location of your septic tank and drain-field.
- ☐ Protect your septic system by not parking, driving or building over the tank or drainfield. By compacting the soil, you harm its natural ability to treat and transport the effluent.
- ☐ Have the tank inspected annually and pumped as needed (every three to five years) to prevent the sludge and scum in your septic tank from overflowing. Hire a licensed septic system pumper to do this job. Check the tank for leaks and inspect the tank's baffles.
- ☐ Do not use septic tank additives. Don't flush non-degradable materials such as oil, grease, plastic products, disposable diapers, rags, paper towels or cigarette butts. They'll only cause problems by clogging your septic system.
- ☐ Garbage disposals can significantly increase the accumulation of solids in septic tanks and contribute to drainfield failure. Use of disposals will require more frequent pumping and monitoring of the system.
- ☐ Household hazardous wastes should never be flushed or put down the drain. This includes strong acids or bases, petroleum products, solvents, pharmaceuticals and pesticides.
- ☐ Consider disposal alternatives for non-hazardous solid waste, including worm bin composting for food waste.
- ☐ Conserving water can also help septic systems function efficiently. Install flow restrictors on faucets and showerheads, repair leaky pipes and hose cocks and select water saving toilets and other household appliances.
- ☐ Don't plant trees and shrubs over septic tanks or drainfields. The water seeking roots of these plants can damage your home septic system. Grass or shallow-rooted plants tend to be the best cover for a drainfield.
- ☐ Watch for signs of system failure and catch problems early. These include offensive odors, surfacing sewage, wet spots or lush vegetation over the drainfield, toilet back-ups into the tub or shower or slow draining toilets or sinks.

5) What happens to the solids?

Solids from the Vashon Treatment Plant and most of the septage that is pumped from septic tanks on the Island are sent to the South Treatment Plant in Renton to be processed. One hundred percent of them are beneficially reused as a soil amendment, called biosolids. An interesting project here on Vashon at the Island Center Forest is using biosolids and other types of compost and measuring their ability to sequester carbon and renew the depleted soils of the borrow pit at the former landfill.

(<http://www.kingcounty.gov/environment/wastewater/Biosolids/ClimateChange.aspx>).



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How the new plant is helping the Puget Sound

- ☐ **Marine outfall extended.** The outfall for the treatment plant was extended 1,450 feet, putting it 2,800 feet offshore. The extended outfall resulted in improved water quality because the effluent is discharged in deeper water where there are more currents to move the effluent out of the area. This also enabled geoduck harvesting in the area. Commercial geoduck harvests are managed jointly by the State of Washington and certain western Washington treaty Indian tribes. In this instance, the Puyallup Indian Tribe is the state's co-manager.
- ☐ **Mitigation measure for treatment plant outfall extension** Mitigation for the outfall project included the removal of 5.3 acres of derelict gill nets in Colvos Passage and Shilshole Bay as part of a Puget Sound-wide program. Abandoned, lost and discarded fishing gear can cause safety problems in marine waters for divers and sea life. Locating and safely removing this derelict fishing gear reduced the threat to divers and sea life in these important salmon migration run areas.
- ☐ **Ultra-violet light for disinfection:** By switching to ultra-violet light for disinfection, the plant avoids the use of chlorine and reduces the amount of chemicals in the treatment process and plant effluent.
- ☐ **Lower effluent nitrogen levels:** Though nitrogen removal is not currently required by the NPDES discharge permit, the new Vashon plant is designed to better remove nitrogen from the wastewater.

Vashon Wastewater Treatment Plant background

Vashon Sewer District contracted with King County in 1999 to treat the wastewater of its customers. The treatment system had experienced several violations of the plant's discharge permits for failure to meet effluent standards and was being sued by a citizen watchdog group known as the "Waste Action Project." Taking advantage of King County's expertise in wastewater treatment and financing was the option chosen to solve these problems. The Vashon Sewer District continues to operate the collection system.

When King County took over operations in 1999, several interim steps were implemented to get the system up to date and to meet permit standards. The plant was at capacity for the amount of incoming waste and lacked sufficient backup systems. Construction on a new plant began in fall of 2004. Moving the marine outfall farther out in the Puget Sound was completed in October 2004.

Since the new plant was completed in late 2006, the plant has increased capacity, a high quality effluent that exceeds permit standards, increased redundancy, and enhanced backup systems. This project was funded in part by loans from the Public Works Trust Fund and the Washington State Department of Ecology and a grant from the US Environmental Protection Agency. The Vashon Wastewater Treatment Plant is meeting regulatory requirements and will protect human health and the environment, including Vashon beaches.

For more information, check the web at

<http://www.kingcounty.gov/environment/wtd/About/System/Vashon.aspx> or contact Jo Sullivan at 206-296-8361.